REMARKS

Claims 1 through 6 remain in the application. A marked up copy of the amended paragraph of the Specification is attached hereto as Appendix A.

The Specification has been amended on page 1 to properly identify the application to which Applicants are claiming the benefit under 35 U.S.C. § 120.

The Examiner has requested that Applicants provide the document entitled "New directions in computational aerodynamics".

Accordingly, in a separate Information Disclosure Statement being filed concurrently, Applicants are providing the document requested by the Examiner.

The drawings were objected to because the Examiner alleges that Figures 5, 8A, 8B, 9 A-F, and 10 should be designated by a legend such as – Prior Art --. Applicants respectfully traverse this objection.

As to Figure 10, Applicants are claiming a system having a spray gun placement code means operable with a user input mechanism, trajectory determination code means for computing at least one trajectory, and trajectory display code means for effecting display of the at least one trajectory. Figure 10 illustrates a portion of the system being claimed and therefore cannot be labeled as prior art although it contains known computer components. Further, this designation was not required in U.S. Patent No. 6,263,300 to Strumolo et al. As such, Applicants submit that Figure 10 does not have to be labeled as prior art.

As to Figures 5, 8A, 8B, 9A through 9F, Applicants are claiming a method with the step of displaying a trajectory of paint particles for the present invention. These figures illustrate a portion of the method being claimed and therefore cannot be labeled as prior art. As such, Applicants submit that Figures 5, 8A, 8B, 9A through 9F do not have to labeled as prior art

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although the representations are similar to Figures 2, 4A, 4B, and 5A through 5F of Miller et al. Therefore, it is respectfully submitted that the drawings overcome the objection.

The disclosure was objected to because of an informality regarding the number of figures in the specification. Applicants respectfully traverse this objection.

The specification has been amended on pages 19 and 20 to clarify and correct the figure numbers in the specification. It is respectfully submitted that the specification, as amended, overcomes the objection.

Claims 1 through 6 were rejected under 35 U.S.C. § 102(b) as being anticipated by Miller et al. (SAE Paper No. 982291). Applicants respectfully traverse this rejection.

SAE Paper No. 982291 to Miller et al. discloses transient CFD simulations of a bell sprayer. Two numerical models are required in order to analyze the effect of paint transfer efficiency under varying bell operation conditions. First, the shaping air from a bell sprayer is simulated using a new computational fluid dynamics simulation, PowerFlow, as described in section 2.1. The numerical simulation is a single species, single-phase model and subsequently, paint spray dynamics and interaction with the shaping air must be modeled using a separate simulation. Section 2.2. describes SpraySIM which uses the flowfields from the CFD tool and calculates the drag the particles experience under the influence of the shaping air, gravity, and electric potential. Paint particle trajectories can then be calculated and paint transfer efficiency determined. Miller et al. does not disclose spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model. Miller et al. also does not disclose preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the

desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory.

As to claim 1, claim 1 claims the present invention as a system for designing a vehicle by enabling dynamic placement of paint spray particles into a flow domain to permit visual observation and alteration of resulting particle trajectories under a computed flow solution over a computer aided design (CAD) model representative of a desired portion of the vehicle represented on a display by a computer having memory, a processor and a user input mechanism associated therewith. The system includes spray gun placement code means operable with the user input mechanism to dynamically effect a desired placement of at least one paint spray gun on the display with respect to the desired portion of the CAD model. The system also includes trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions. The system further includes trajectory display code means for effecting display of the at least one trajectory with respect to the desired portion of the CAD model.

As to claim 5, claim 5 claims the present invention as a method for designing a vehicle using particle trajectory analysis with a computer aided design (CAD) model representative of the vehicle. The method includes the steps of preparing a CAD model of a desired portion of the vehicle and placing a paint spray gun at a desired location with respect to the desired portion of the vehicle. The method also includes the steps of specifying a set of particle information describing particles to be sprayed from the paint spray gun and computing a trajectory for a particle stream emanating from the paint spray gun. The method further includes the steps of displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof and repositioning the paint spray gun if necessary to achieve a

desired trajectory. Claim 6 is also directed to a method similar to claim 5 and includes other features of the present invention.

A rejection grounded on anticipation under 35 U.S.C. § 102 is proper only where the subject matter claimed is identically disclosed or described in a reference. In other words, anticipation requires the presence of a single prior art reference which discloses each and every element of the claimed invention arranged as in the claim. In re Arkley, 455 F.2d 586, 172 U.S.P.Q. 524 (C.C.P.A. 1972); Kalman v. Kimberly-Clark Corp., 713 F.2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983); Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co., 730 F.2d 1452, 221 U.S.P.Q. 481 (Fed. Cir. 1984).

Miller et al. '291 does not disclose the claimed invention of claims 1 through 4. Specifically, Miller et al. '291 merely discloses transient CFD simulations of a bell sprayer in which two numerical models are required in order to analyze the effect of paint transfer efficiency under varying bell operation conditions. Miller et al. '291 lacks spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model. In Miller et al. '291, the SAE paper merely describes transient CFD simulations of a bell sprayer, but not how to use the bell sprayer or the logic behind its use as it relates to a vehicle as claimed by Applicants. Further, in Miller et al. '291, the SAE paper predicts paint spray trajectory, but does not disclose means operable with a user input mechanism to effect placement of a paint spray gun on a display with respect to a CAD model of a vehicle as claimed in claims 1 through 4. The Examiner has not shown in Miller et al. '291 where such feature is expressly disclosed.

Based on the above, Miller et al. '291 fails to disclose the combination of a paint spray particle trajectory analysis system including spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun

on a display with respect to a desired portion of a CAD model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions as claimed by Applicants. Miller et al. '291 fails to disclose each and every element of the claimed combination of a paint spray particle trajectory analysis system as arranged in the claims and claimed by Applicants. As a result, the Miller et al. '291 SAE paper cannot be an anticipatory reference under 35 U.S.C. § 102(b) to claims 1 through 4 of the present application. Therefore, it is respectfully submitted that claims 1 through 4 are allowable over the rejection under 35 U.S.C. § 102(b).

Moreover, Miller et al. '291 does not disclose the claimed invention of claims 5 and 6. Miller et al. '291 lacks preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. In Miller et al. '291, the SAE paper merely describes transient CFD simulations of a bell sprayer, but not how to use the bell sprayer or the logic behind its use as it relates to a vehicle as claimed by Applicants. In claims 5 and 6, Applicants are claiming preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. Once again, the Examiner has failed to show in Miller et al. '291 where such steps are disclosed.

Based on the above, Miller et al. '291 fails to disclose the combination of a method for designing a vehicle using particle trajectory analysis with a computer aided design (CAD) model representative of the vehicle including the steps of preparing a CAD model of a desired portion of the vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, specifying a set of particle information describing particles to be sprayed from the paint spray gun, computing a trajectory for a particle stream emanating from the paint spray gun, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory as claimed by Applicants. Miller et al. '291 fails to disclose each and every step of the claimed combination of a method for designing a vehicle using particle trajectory analysis as arranged in the claims and claimed by Applicants. As a result, the Miller et al. '291 SAE paper cannot be an anticipatory reference under 35 U.S.C. § 102(b) to claims 5 and 6 of the present application. Therefore, it is respectfully submitted that claims 5 and 6 are allowable over the rejection under 35 U.S.C. § 102(b).

Claims 1 through 6 were rejected under 35 U.S.C. § 102(e) as being anticipated by Strumolo et al. (U.S. Patent No. 6,263,300). Applicants respectfully traverse this rejection.

The present application is a Continuation-In-Part (CIP) of the Strumolo et al. '300 patent. Strumolo et al. '300 does not qualify as prior art to the claimed invention of claims 1 through 6. Specifically, the present application and the Strumolo et al. '300 patent share one or more persons as joint inventors and the present application chains back under 35 U.S.C. § 120 to the application that matured into the Strumolo et al. '300 patent. The present application claims and is entitled to the effective filing date of the common parent application, which is October 19, 1998 under 35 U.S.C. § 120. As a result, Strumolo et al. '300 cannot qualify as prior art under 35

U.S.C. § 102(e). Therefore, it is respectfully submitted that claims 1 through 6 are allowable over the rejection under 35 U.S.C. § 102(e).

Claims 1 through 6 were rejected under 35 U.S.C. § 103 as being unpatentable over Kinema/SIM (ArSciMed, 1996) in view of Strumolo (U.S. Patent No. 5,568,404) or Miller et al. '291. Applicants respectfully traverse this rejection.

Kinema/SIM Manual from ArSciMed discloses an interactive software tool that presents a simulation space where you can construct and animate complex physical phenomena. The basic building blocks are particles, sources, and obstacles. Kinema/SIM does <u>not</u> disclose <u>spray gun placement code means</u> operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model <u>and trajectory determination code means</u> for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions.

U.S. Patent No. 5,568,404 to Strumolo discloses a method and system for predicting sound pressure levels within a vehicle due to wind noise. The system and method includes a wind noise modeler, which is implemented as an Excel spreadsheet that runs on a PC. Strumolo does <u>not</u> disclose <u>spray gun placement code means</u> operable with the user input mechanism to dynamically effect a desired placement of at least one paint spray gun on the display with respect to the desired portion of the CAD model <u>and trajectory determination code means</u> for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions.

In contradistinction, claim 1 claims the present invention as a system for designing a vehicle by enabling dynamic placement of paint spray particles into a flow domain to permit visual observation and alteration of resulting particle trajectories under a computed flow solution over a computer aided design (CAD) model representative of a desired portion of the vehicle represented on a display by a computer having memory, a processor and a user input mechanism associated therewith. The system includes spray gun placement code means operable with the user input mechanism to dynamically effect a desired placement of at least one paint spray gun on the display with respect to the desired portion of the CAD model. The system also includes trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions. The system further includes trajectory display code means for effecting display of the at least one trajectory with respect to the desired portion of the CAD model.

The United States Court of Appeals for the Federal Circuit (CAFC) has stated in determining the propriety of a rejection under 35 U.S.C. § 103, it is well settled that the obviousness of an invention cannot be established by combining the teachings of the prior art absent some teaching, suggestion or incentive supporting the combination. See In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 227 U.S.P.Q. 657 (Fed. Cir. 1985); ACS Hospital Systems, Inc. v. Montefiore Hospital, 732 F.2d 1572, 221 U.S.P.Q. 929 (Fed. Cir. 1984). The law followed by our court of review and the Board of Patent Appeals and Interferences is that "[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art." In re Rinehart, 531 F.2d 1048, 1051, 189 U.S.P.Q. 143, 147 (C.C.P.A. 1976). See also In re Lalu, 747 F.2d 703,

705, 223 U.S.P.Q. 1257, 1258 (Fed. Cir. 1984) ("In determining whether a case of prima facie obviousness exists, it is necessary to ascertain whether the prior art teachings would appear to be sufficient to one of ordinary skill in the art to suggest making the claimed substitution or other modification.")

As to the differences between the prior art and the claims at issue, Kinema/SIM merely discloses an interactive software tool that presents a simulation space where you can construct and animate complex physical phenomena. Kinema/SIM does not disclose spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions. The Examiner even admits on page 10 of the Office Action that Kinema/SIM does not specifically teach simulating paint droplet particle flow past an automobile.

Strumolo '404 merely discloses a method and system for predicting sound pressure levels within a vehicle due to wind noise including a wind noise modeler, which is implemented as an Excel spreadsheet that runs on a PC. Strumolo '404 lacks spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle

external conditions. The Examiner even admits on page 10 of the Office Action that Strumolo et al. '404 does not teach particle trajectories of paint droplets.

Miller et al. '291 merely discloses transient CFD simulations of a bell sprayer in which two numerical models are required in order to analyze the effect of paint transfer efficiency under varying bell operation conditions. Miller et al. '291 lacks spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model. Contrary to the Examiner's opinion, Applicants are not claiming an intended use for their earlier disclosure relating to simulation of particle flow past a simulated automobile, but are claiming spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions, which are not found in the earlier disclosure. As such, there is no motivation in the art to combine Kinema/SIM, Strumolo et al. '404, and Miller et al. '291 together. Further, Applicants disagree with the Examiner's motivation for his alleged combination, because the method and system of Applicants' invention enables dynamic placement of a paint spray gun into a flow domain to permit visual observation and alteration of resulting paint particle trajectories with respect to a CAD model representative of the vehicle and permits modification of vehicle design based upon computed particle trajectories with respect to a CAD model of the vehicle.

There is absolutely no teaching or suggestion in the art that to provide spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD

model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions. The Examiner may not, because he/she doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction to supply deficiencies in the factual basis. See In re Warner, 379 F. 2d 1011, 154 U.S.P.Q. 173 (C.C.P.A. 1967).

Even if these references could be combined, neither teaches spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions. Applicants are not attacking the references individually, but are clearly pointing out that each reference is deficient and, if combined (although Applicants maintain that they are not combinable), the combination is deficient. The present invention sets forth a unique and non-obvious combination of a system that enables dynamic placement of a paint spray gun into a flow domain to permit visual observation and alteration of resulting paint particle trajectories with respect to a CAD model representative of the vehicle. The references, if combinable, fail to teach or suggest the combination of a paint spray particle trajectory analysis method and system including spray gun placement code means operable with a user input mechanism to dynamically effect a desired placement of at least one paint spray gun on a display with respect to a desired portion of a CAD model and trajectory determination code means for computing at least one trajectory for a particle stream emanating from the at least one paint spray gun relative to the

desired portion of the CAD model for a predetermined set of particle characteristics in a predetermined set of particle external conditions as claimed by Applicants. Thus, the Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claims 1 through 4 are allowable over the rejection under 35 U.S.C. § 103.

As to claim 5, claim 5 claims the present invention as a method for designing a vehicle using particle trajectory analysis with a computer aided design (CAD) model representative of the vehicle. The method includes the steps of preparing a CAD model of a desired portion of the vehicle and placing a paint spray gun at a desired location with respect to the desired portion of the vehicle. The method also includes the steps of specifying a set of particle information describing particles to be sprayed from the paint spray gun and computing a trajectory for a particle stream emanating from the paint spray gun. The method further includes the steps of displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof and repositioning the paint spray gun if necessary to achieve a desired trajectory. Claim 6 is also directed to a method similar to claim 5 and includes other features of the present invention.

As to the differences between the prior art and the claims at issue, Kinema/SIM merely discloses an interactive software tool that presents a simulation space where you can construct and animate complex physical phenomena. Kinema/SIM does not disclose preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. The Examiner even admits on page 10 of the Office Action that Kinema/SIM does not specifically teach simulating paint droplet particle flow past an automobile.

Strumolo '404 <u>merely</u> discloses a method and system for predicting sound pressure levels within a vehicle due to wind noise including a wind noise modeler, which is implemented as an Excel spreadsheet that runs on a PC. Strumolo '404 lacks preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. The Examiner even admits on page 10 of the Office Action that Strumolo et al. '404 does <u>not</u> teach particle trajectories of paint droplets.

Miller et al. '291 <u>merely</u> discloses transient CFD simulations of a bell sprayer in which two numerical models are required in order to analyze the effect of paint transfer efficiency under varying bell operation conditions. Miller et al. '291 lacks preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. As such, there is no motivation in the art to combine Kinema/SIM, Strumolo et al. '404, and Miller et al. '291 together.

There is absolutely <u>no teaching or suggestion</u> in the art of preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. The Examiner may not, because he/she doubts that the invention is patentable, resort to speculation, unfounded assumptions or hindsight reconstruction

to supply deficiencies in the factual basis. See In re Warner, 379 F. 2d 1011, 154 U.S.P.Q. 173 (C.C.P.A. 1967).

Even if these references could be combined, neither teaches preparing a CAD model of a desired portion of a vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory. Applicants are not attacking the references individually, but are clearly pointing out that each reference is deficient and, if combined (although Applicants maintain that they are not combinable), the combination is deficient. The present invention sets forth a unique and non-obvious combination of a method that enables dynamic placement of a paint spray gun into a flow domain to permit visual observation and alteration of resulting paint particle trajectories with respect to a CAD model representative of the vehicle. The references, if combinable, fail to teach or suggest the combination of a method for designing a vehicle using particle trajectory analysis with a computer aided design (CAD) model representative of the vehicle including the steps of preparing a CAD model of a desired portion of the vehicle, placing a paint spray gun at a desired location with respect to the desired portion of the vehicle, specifying a set of particle information describing particles to be sprayed from the paint spray gun, computing a trajectory for a particle stream emanating from the paint spray gun, displaying the trajectory relative to the desired portion of the vehicle on a display to permit visual observation thereof, and repositioning the paint spray gun if necessary to achieve a desired trajectory as claimed by Applicants.

Further, the CAFC has held that "[t]he mere fact that prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification". In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127

(Fed. Cir. 1984). The Examiner has failed to show how the prior art suggested the desirability of modification to achieve Applicants' invention. Thus, the Examiner has failed to establish a case of prima facie obviousness. Therefore, it is respectfully submitted that claims 5 and 6 are allowable over the rejection under 35 U.S.C. § 103.

Obviousness under § 103 is a legal conclusion based on factual evidence (In re Fine, 837 F.2d 1071, 1073, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988), and the subjective opinion of the Examiner as to what is or is not obvious, without evidence in support thereof, does not suffice. Since the Examiner has not provided a sufficient factual basis, which is supportive of his/her position (see In re Warner, 379 F.2d 1011, 1017, 154 U.S.P.Q. 173, 178 (C.C.P.A. 1967), cert. denied, 389 U.S. 1057 (1968)), the rejection of claims 1 through 6 is improper. Therefore, it is respectfully submitted that claims 1 through 6 are allowable over the rejection under 35 U.S.C. § 103.

Based on the above, it is respectfully submitted that the claims are in a condition for allowance or in better form for appeal. Applicants respectfully submit that the final rejection is improper and reconsideration and withdrawal of the final rejection be taken. It is respectfully requested that this Amendment be considered and entered under 37 C.F.R. 1.116.

Respectfully submitted,

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APPENDIX A

VERSION OF THE SPECIFICATION WITH MARKINGS TO SHOW THE

CHANGES

IN THE SPECIFICATION:

Please amend the specification on page 19, line 13 through page 20, line 15, as follows:

A representative computer system for the paint spray particle trajectory analysis method and system, according to the present invention, is depicted in FIG. [13] 10. The system includes a processing unit 150 connected to a user interface which may include a display terminal 152, a keyboard 154, a pointing device, such as a mouse, 156, and the like. The processing unit 150 preferably includes a central processing unit, a memory, and stored instructions, which implement a method to assist in vehicle design according to the present invention. The stored instructions may be stored within the processing unit 150 in the memory, or in any non-volatile storage such as magnetic or optical media, EPROM, EEPROM, or the like. Alternatively, instructions may be loaded from removal magnetic media 160, such as a removal disk, sometimes called a floppy disk, optical media 158, or the like. In a preferred embodiment, the system includes a general purpose computer program to implement the functions illustrated and described with reference to FIGS. 1 through [12] 9F. Of course, a system according to the present invention could also be embodied with a dedicated device, which includes various combinations of hardware and software. The preferred embodiment may also include a printer